

A. L. LOOMIS.
TOY.

APPLICATION FILED JULY 22, 1915.

1,222,005.

Patented Apr. 10, 1917

2 SHEETS—SHEET 1.

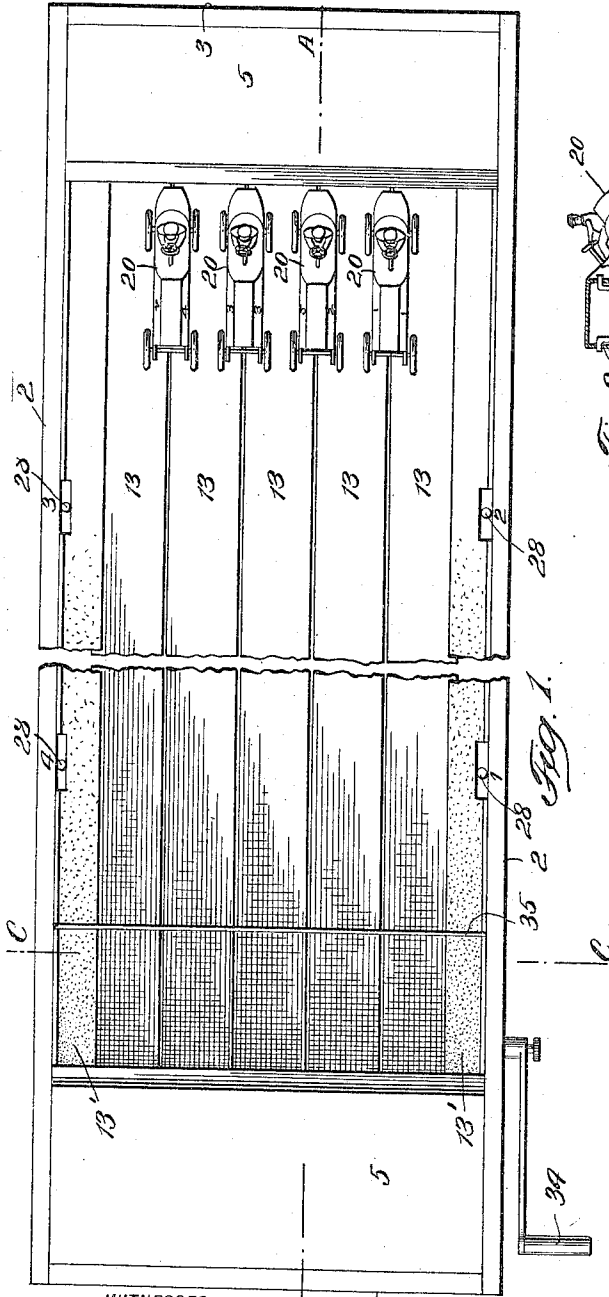


Fig. 1.

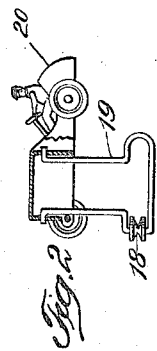


Fig. 2.

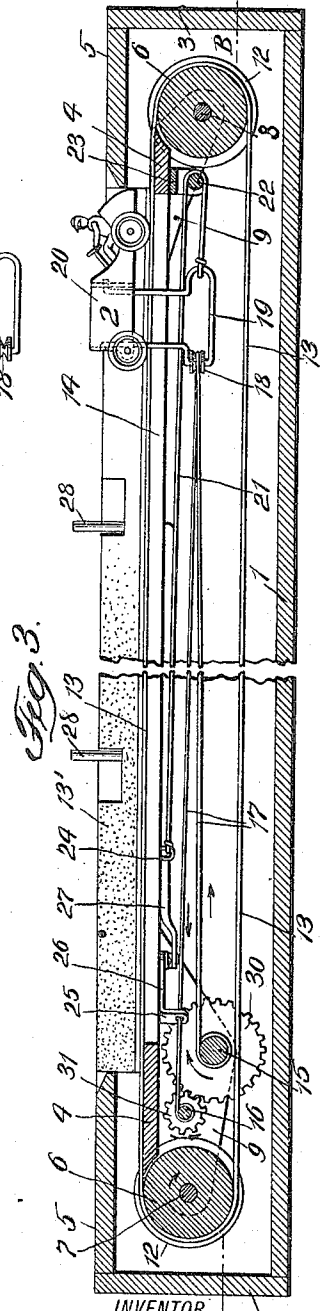


Fig. 3.

WITNESSES:
Julius H. [Signature]

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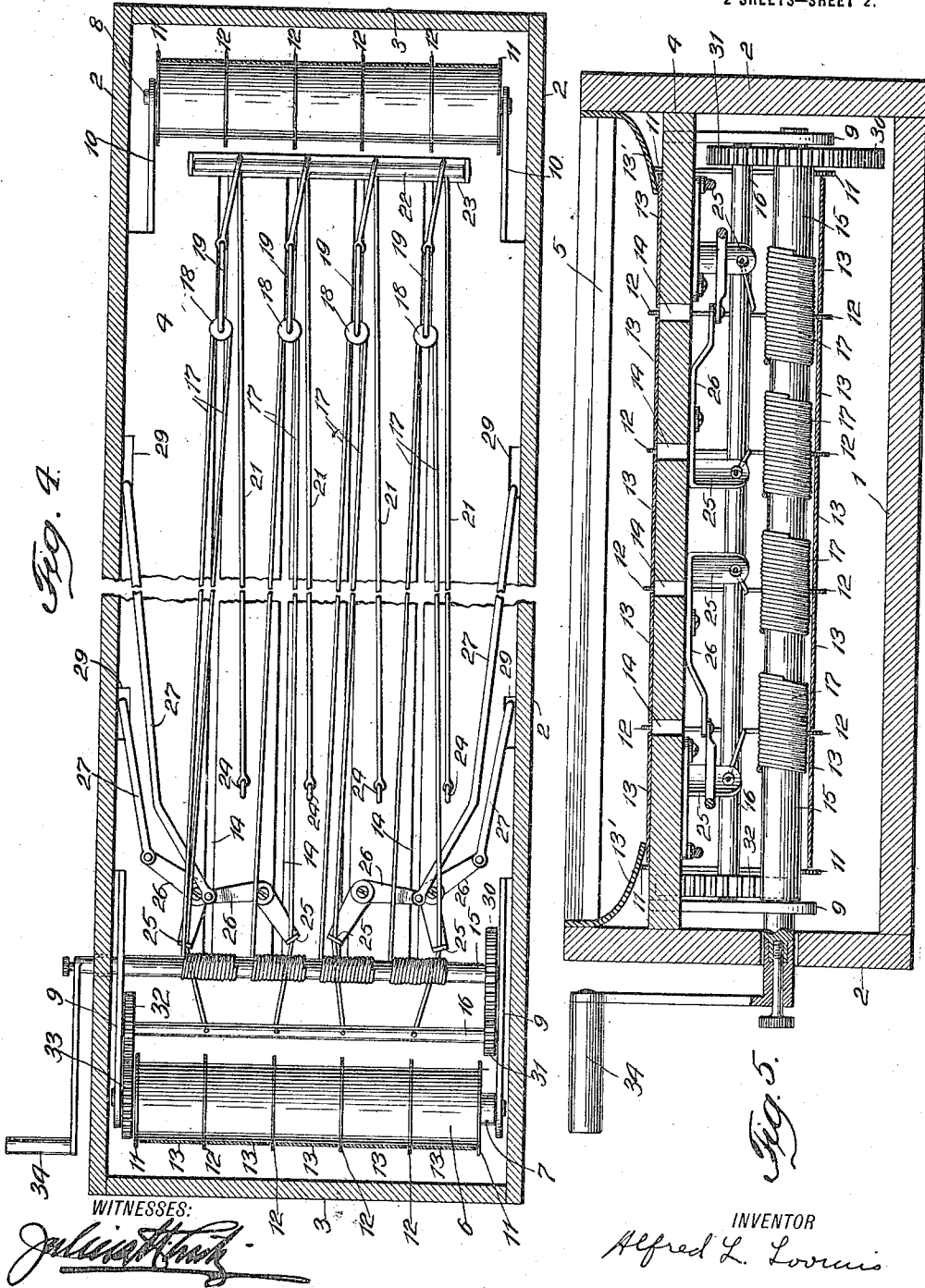
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INVENTOR

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UNITED STATES PATENT OFFICE.

ALFRED L. LOOMIS, OF TUXEDO PARK, NEW YORK.

TOY.

1,222,005.

Specification of Letters Patent.

Patented Apr. 10, 1917.

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To all whom it may concern:

Be it known that I, ALFRED L. LOOMIS, a citizen of the United States, residing at Tuxedo Park, in Orange county and State of New York, have invented a new Toy, of which the following is a specification.

This invention relates to toys and has for its object to provide a new toy representing a race in which those playing with the toy take part.

An important advantage of my new toy is that it provides a race in which the speed of each racer is controlled by a hand-lever in an irregular, and in what appears to persons playing with the toy, a mysterious way.

Another advantage of my new toy is that, although the distance actually covered by the racers is comparatively short, the toy provides a race which lasts a considerable length of time and is throughout its continuance exciting, owing not only to the fact that the racers are apparently going at a high speed, but also to the fact that the relative position of the racers is constantly changing throughout the race.

In order to accomplish these and other purposes, my new toy is provided with racers held in the bights of cords, the ends of which are attached to rotatable spindles in such a way that when the cord is wound on one spindle, it is simultaneously unwound from the other. With this feature, I have combined means for controlling the winding up of the cords and a moving belt or track upon which the racers rest.

In order that my invention may be clearly understood, I will describe it in connection with the embodiment illustrated in the accompanying drawings, in which—

Figure 1 is a plan view of the complete toy;

Fig. 2 is a side view, partly in section, of one of the racers and the means for attaching it to the cord which moves it;

Fig. 3 is a longitudinal section of the toy taken upon the line A—A of Fig. 1;

Fig. 4 is a bottom view of the toy sectioned along the line B—B of Fig. 3; and

Fig. 5 is a transverse section of the toy taken on the line C—C of Fig. 1.

The framework of the toy consists of a box having a bottom 1, two sides 2, 2 and two ends 3, 3. Near the top of the box is the transverse floor 4, which is attached to the two sides 2, 2. The floor 4 terminates at each of its ends at some little distance from

the ends 3, 3 of the box and is provided with longitudinal slots 14, whose extent may clearly be seen in Fig. 3. Above the floor are the two end pieces 5, 5 (Figs. 1, 3).

Below and at the ends of the floor 4 are the drums 6 mounted upon shafts 7 and 8, which are pivoted in the supports 9, 9 and 10, 10, depending from the floor. The drums 6 are provided at each end with thin rims or projections 11, and each drum has between the projections 11 a plurality of similar projections 12. A plurality of belts 13 are stretched over the drums 5 and guided and held apart by the rims 12. The upper reaches of the belts 13 pass over and lie upon the upper surface of the floor 4 forming a movable race course. The belts 13 may be colored to represent a road or other suitable race course, and strips of green fabric 13' may be glued or tacked to the sides 2 to represent the turf at the roadside.

The racers 20, which in the form shown represent racing automobiles, rest upon the upper reaches of the belts 13. A depending loop of spring wire 19, sprung into holes in the front and back of the hood of each of the racers 20, as clearly shown in Fig. 2, depends between the belts 13 and through one of the slots 14. Each wire loop 19 is provided at its front lower corner with a pulley 18.

The large shaft or spindle 15 and the small shaft or spindle 16 are journaled in the supports 9, 9. Cords or threads 17 are attached at one end to the large spindle 15 and at the other end to the small spindle 16. The bight of each cord 17 passes around the pulley 18 upon the depending wire 19 of one of the racers 20. Each cord 17 is sufficiently long to extend from the small spindle 16 around the pulley 18 and back to the large spindle 15, and at the same time to have a considerable portion of its length wound about the large spindle 15. When the floor 4 is about two and a half or three feet long, I have found it desirable to make the cords 17 each about thirty feet long. To the rear lower corner of each wire 19 is attached one end of a spring, which in the form shown is an elastic rubber band 21. The bands 21 pass around the rotatable shaft or pulley 22, which is journaled in the support 23, attached to the bottom of the floor 4, and extended to the staples 24 in the bottom of the floor 4, to which their other ends are attached. These rubber bands tend to pull the

racers 20 away from the spindles 15, 16, and thus at all times to keep the cords 17 tight.

The means for controlling the speed of the racers consist of the guides 25 near the small spindle 16, having perforations through which the cords 17 pass. The position and movement of the guides 25 govern the way in which the cords 17 wind up upon the small spindle 16. The guides 25 are supported upon one end of the bell-crank levers 26, pivoted to the bottom of the floor 4. Rods 27 are pivoted to the other end of the bell-crank levers 26 and have upwardly projecting ends or handles 28 passing through slots 29 in the floor 4. On the upper edge of the sides 2, adjacent to each of the handles 28, is a number which corresponds to a number upon the racer connected with the cord controlled by said handle.

Upon the large spindle 15 is a pinion 30 meshing with a smaller pinion 31 upon the small spindle 16. The ratio of the diameter of the pinion 31 to the diameter of the pinion 30 is equal to or slightly less than the ratio of the diameter of the spindle 16 to the diameter of the spindle 15, so that the peripheral velocity of the spindle 16 is equal to or slightly greater than the peripheral velocity of the spindle 15. Upon the spindle 16 there is also a pinion 32, which meshes with a pinion 33 upon the shaft 7. Any suitable means may be provided for causing the shafts and spindles 7, 15, 16 to rotate, as, for instance, the detachable crank 34 engaging a square projection upon the end of the spindle 15.

The operation of my improved toy is as follows:—When the racers are all at the end of the toy farthest from the spindles, that is to say, in the position indicated in the drawings, the spindle 15 is rotated in a clockwise direction (Fig. 3) by means of the crank 34. The gearing described causes the small spindle 16 to rotate in an anticlockwise direction (Fig. 3), while the shaft 7 rotates in a clockwise direction (Fig. 3). The rotation of the spindles causes the cords 17 to wind up upon the small spindle 16, while at the same time unwinding from the large spindle 15. As the peripheral velocity of the small spindle 16 is, as already stated, equal to or slightly greater than the peripheral velocity of the large spindle 15, the initial rotation of the crank 34 results in either no movement or a slight forward movement of the racers. As the rotation of the crank 34 is continued, the cords wind over themselves upon the small spindle 16, which has the effect of making them wind upon a cylinder of greater diameter, and thus wind up faster than at first. If the cords are wound upon themselves on the large spindle 15 at the beginning of the race, as is usually the case, instead of being

in Fig. 5, the unwinding of the cords from the large spindle 15 will tend to decrease the diameter of the cylinder upon which this end of the cords are wound, and thus decrease the speed with which the cords are paid out from the large spindle 15. As the turning of the crank 34 continues, therefore, the speed with which the cords are wound upon the small spindle 16 increases, while the speed with which the cords are paid out from the large spindle 15 decreases (although to a much less extent, because the ratio of the diameter of the cords to the diameter of the spindle 15 is very much less than the ratio of the diameter of the cords to the diameter of the small spindle 16), and the racers in consequence move forward at an increasing rate of speed. The actual movement of the racers is comparatively slow, but they are given the appearance of traveling at a high rate of speed by backward movement of the upper reaches of the belts 13, which pass rapidly under the racers and cause their wheels to rotate with great rapidity.

The speed at which each racer proceeds depends upon the way in which its cord winds up upon the small spindle 16 (the way in which the thread may be wound upon the large spindle 15 being immaterial owing to the insignificant diameter of the thread in comparison to the diameter of the large spindle 15). The way in which the cords wind up upon the small spindle 16 is controlled by the handles 28, which operate the guides 25.

In using my new toy, one person acts as a referee and rotates the crank 34. The other players manipulate the handles 28, each endeavoring to make the racer having the number corresponding to that of his handle move more rapidly than the other racers. As the floor 4 and the belts 13 prevent the persons manipulating the handles 28 from watching the way in which the cords are winding up upon the small spindle 16, each player is guided in his manipulation of the handle solely by the relative movement of the racers and must ascertain empirically what manipulation of the handle gives his racer the greatest speed. If the player by too great an eagerness manipulates the handle in such a way to make his car gain rapidly at first, he is likely to lose out at the end, for a rapid gain of one racer at the start means that its cord is building up a high and consequently narrow winding upon the small spindle 16. If this winding is too high and narrow, the cord is likely to slip from it and start winding directly upon the spindle again. This, of course, means that it winds slowly and the racer attached to it in consequence slows down. The possibility of the cord thus slipping from its pile of winding makes the race exciting to the very end.

The turning of the crank 34 is continued until one of the racers reaches the finish line 35 (Fig. 1) and wins the race. Before the next race, the crank 34 is turned in the opposite direction from that in which it was turned during the race until the racers are returned to their initial position, and the cords are wound back from the small spindle 16 to the large spindle 15.

In order that it may be clearly understood that my invention is not limited to the precise embodiment shown in the drawings, I will mention a few of the more obvious modifications which may be made in the device illustrated without departing from my invention: The racers need not be in the form of automobiles, but may simulate horse-drawn vehicles, race horses, motor-boats, sailboats, railroad trains, trolley cars, bicycles, or the like, as desired. Any desired number of racers may be used. Other forms of springs may be substituted for the elastic rubber bands 21. Instead of the hand-crank 34, other forms of supplying power may be used, as, for example, an electric motor, or a coiled spring arranged to be wound up as the cars are returned to their initial position after a race. The power need not be applied to the spindle 15, but may be applied to either the spindle 16 or the shafts 7 or 8. The shafts and spindles 7, 8, 15, 16 need not be journaled in supports depending from the floor 4, but may as well be journaled directly in the sides 2 or in supports attached to the sides 2.

I have described my new device as a toy for the reason that its principal utility lies in its ability to entertain and amuse those who are using it. By the use of this word, I do not wish to be understood to imply any limitation as to the size of the apparatus.

What I claim is:—

1. A toy having two spindles and means rotating the same, a cord forming a bight and having one of its ends attached to one of said spindles and its other end to the other of said spindles and arranged to wind up upon one of said spindles while unwinding from the other, and a racer attached in the bight of said cord.

2. A toy having two spindles and means rotating the same, a cord forming a bight and having one of its ends attached to one of said spindles and its other end to the other of said spindles and arranged to wind up upon one of said spindles while unwinding from the other, a racer attached in the bight of said cord, and spring means attached to said racer and tending to draw said cord tight.

3. A toy having a relatively large spindle and a relatively small spindle and means for rotating said spindles, a cord forming a bight and having one of its ends attached to one of said spindles and its other end at-

tached to the other of said spindles and arranged to wind up upon one of said spindles while unwinding from the other, a racer attached in the bight of said cord, and spring means attached to said racer tending to draw said cord tight.

4. A toy having a relatively large spindle and a relatively small spindle, and means for rotating said spindles so that the peripheral velocity of the small spindle is equal to or slightly greater than the peripheral velocity of the large spindle, a cord forming a bight and having one of its ends attached to one of said spindles and its other end to the other of said spindles and arranged to wind up upon one of said spindles while unwinding upon the other, a racer attached in the bight of said cord, and spring means attached to said racer for drawing said cord tight.

5. A toy having a plurality of belts stretched between rotatable drums, a plurality of racers resting upon said belts, two spindles and means for rotating the same, a plurality of cords each having one of its ends attached to one of said spindles and its other end attached to the other of said spindles, and having a bight passing around a portion of each of said racers.

6. A toy having rotatable drums, a slotted floor between said drums, a plurality of belts passing over said drums and along said floor on each side of the slots therein, a plurality of racers resting upon said belts and having attachments depending between said belts and through the slots in said floor, and means connected with said attachments for moving said racers.

7. A toy containing two spindles and means for rotating the same, a cord forming a bight and having one of its ends attached to one of said spindles and its other end attached to the other of said spindles, a racer in the bight of said cord, and manually operated controlling means arranged to control the winding of said cord upon one of said spindles.

8. A toy having a large spindle and a small spindle, and means for rotating said spindles, a cord forming a bight and having one of its ends attached to one of said spindles and its other end to the other of said spindles, a racer in the bight of said cord, spring means attached to said racer and arranged to draw said cord tight, and a manually operated guide for said cord adjacent to said small spindle.

9. A toy having rotatable drums, a slotted floor between said drums, a plurality of belts passing over said drums and along said floor on each side of the slots therein, a plurality of racers resting upon said belts and having attachments depending between said belts and through the slots in said floor, two spindles and means of rotating the same, a plu-

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ality of cords each having one of its ends attached to one of said spindles and the other of its ends attached to the other of said spindles, and having a bight passing through the attachment depending from one of said racers.

10. A toy having rotatable drums, a slotted floor between said drums, a plurality of belts passing over said drums and along said floor on each side of the slots therein, a plurality of racers resting upon said belts and having attachments depending between said belts and through the slots in said floor, two spindles and means of rotating the same, a plurality of cords each having one of its ends attached to one of said spindles and the other of its ends attached to the other of said spindles, and having a bight passing through the attachment depending from one of said racers, and a separate manually operated guide for each of said cords adjacent to one of said spindles.

11. A toy having a spindle and means for rotating the same, a plurality of cords each having one of its ends attached to said spindle, a plurality of racers each connected with one of said cords, separate manually operated guides for each of said cords adjacent to said spindle, and means for preventing a person manipulating said guides from seeing the part of said spindles upon which said cords wind.

12. A toy having a spindle and means for rotating the same, a cord attached to said spindle and arranged to wind up thereon, a racer connected with said cord, and a guide for said cord adjacent to said spindle and manually operated means for moving said guide in a direction substantially parallel to the axis of said spindle.

13. A toy having rotatable drums, and means for rotating said drums, a plurality of belts stretched between said drums, a plurality of racers resting upon a reach of said

belts, and means for moving said racers in a direction opposite to that in which the reach of the belts upon which they rest moves, comprising a spindle and means for rotating the same, a plurality of cords connected with said racers and arranged to wind up upon said spindle.

14. A toy having rotatable drums, a plurality of belts passing over said drums, a plurality of racers resting upon said belts and having attachments depending between said belts, and means connected with said attachments for moving said racers.

15. A toy having rotatable drums, a belt stretched between said drums, a racer resting upon said belt, and means for moving said racer comprising a spindle, means for rotating the same, and speed-reducing mechanism connecting said spindle with said racer.

16. A toy having a racer and means for moving the same, comprising a spindle, means for rotating the same, a cord arranged to wind up on said spindle, a manually operated guide for said cord adjacent said spindle, and a speed-reducing mechanism.

17. A toy having a moving race course, a racer resting thereon and means for moving said racer, comprising a spindle, means for rotating the same, and a speed-reducing mechanism connecting said spindle with said racer.

18. A toy having rotatable drums, means for rotating said drums at a relatively high velocity, a belt passing over said drums, a racer resting upon a reach of said belt, means for moving said racer at a relatively low velocity and in a direction opposite from that in which the reach of the belt upon which the racer rests moves.

In testimony whereof, I have hereunto set my hand.

ALFRED L. LOOMIS.